

Teagasc Heavy Soils Programme Land Drainage



IGUK Conference-14th October 2015

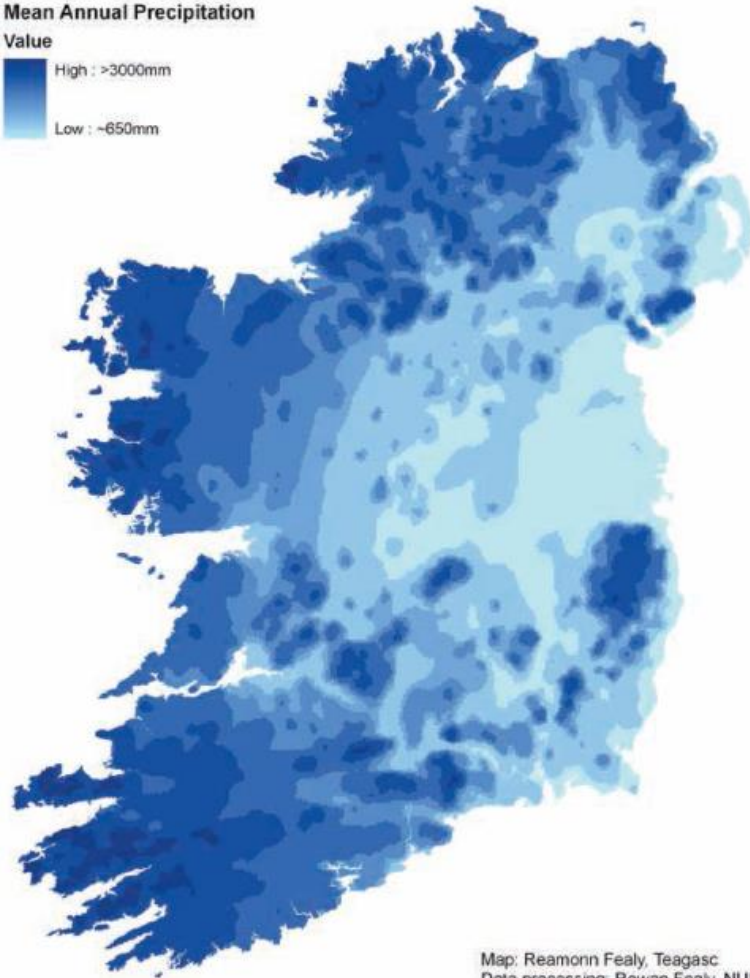


The Irish Agriculture and Food Development Authority

Background: Climate

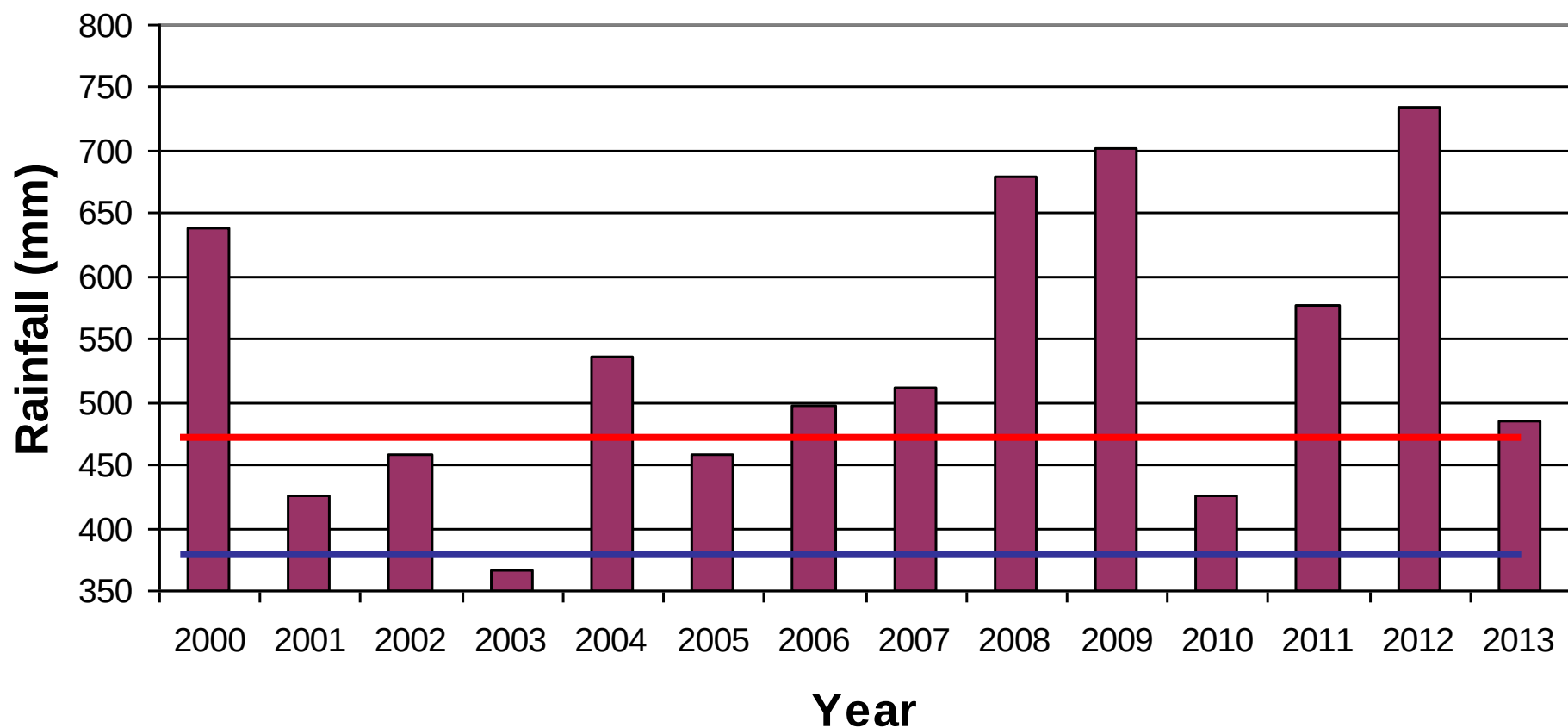
Mean Annual Precipitation

Value



Map: Reamonn Fealy, Teagasc
Data processing: Rowan Fealy, NUIM
Data: Met Eireann

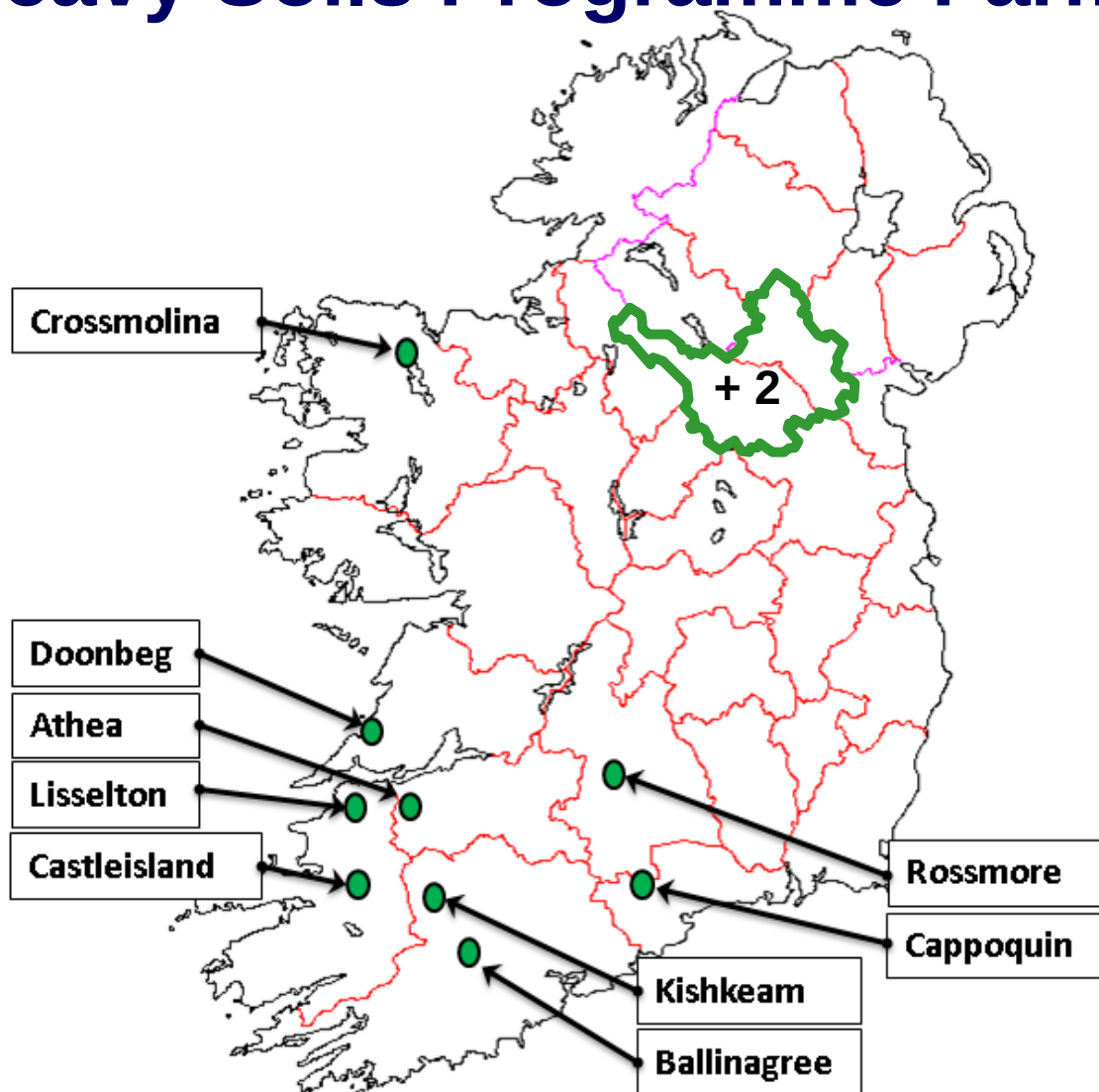
Castleisland rainfall (April-September)



Average Rainfall

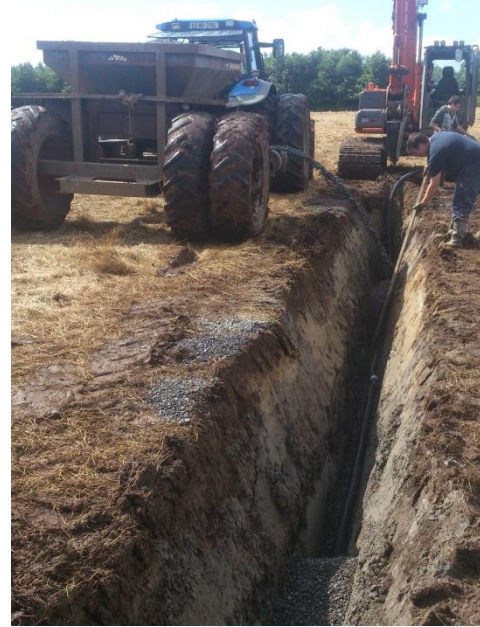
Average Evapotranspiration

Heavy Soils Programme Farms



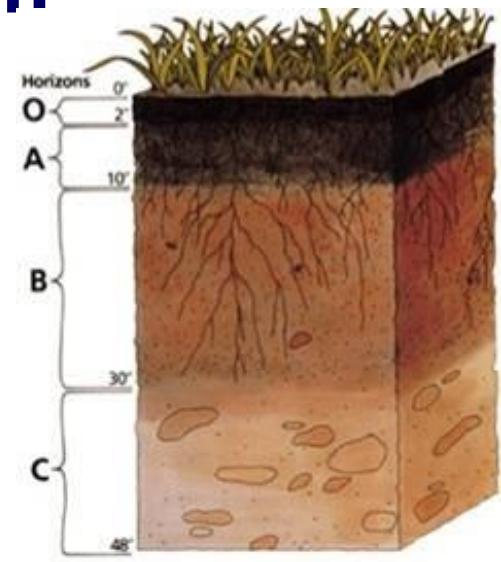
Types of drainage system

- Two principle types are distinguished:
 - **Groundwater drainage system:**
 - A network of piped drains exploiting permeable layers. (*Collects groundwater*)
 - **Shallow Drainage system:**
 - Where movement of water is impeded at all depths. (*Collects surface water*)



Planning a drainage system

- Before planning a drainage system the causes of poor drainage must be understood
- No “one size fits all” solution
- Test pits are dug within the area to be drained
- In test-pits
 - Establish soil type-varying with depth
 - Record depth and rate of water seepage
- Where is water impeded; where is water moving?



Range of Soils

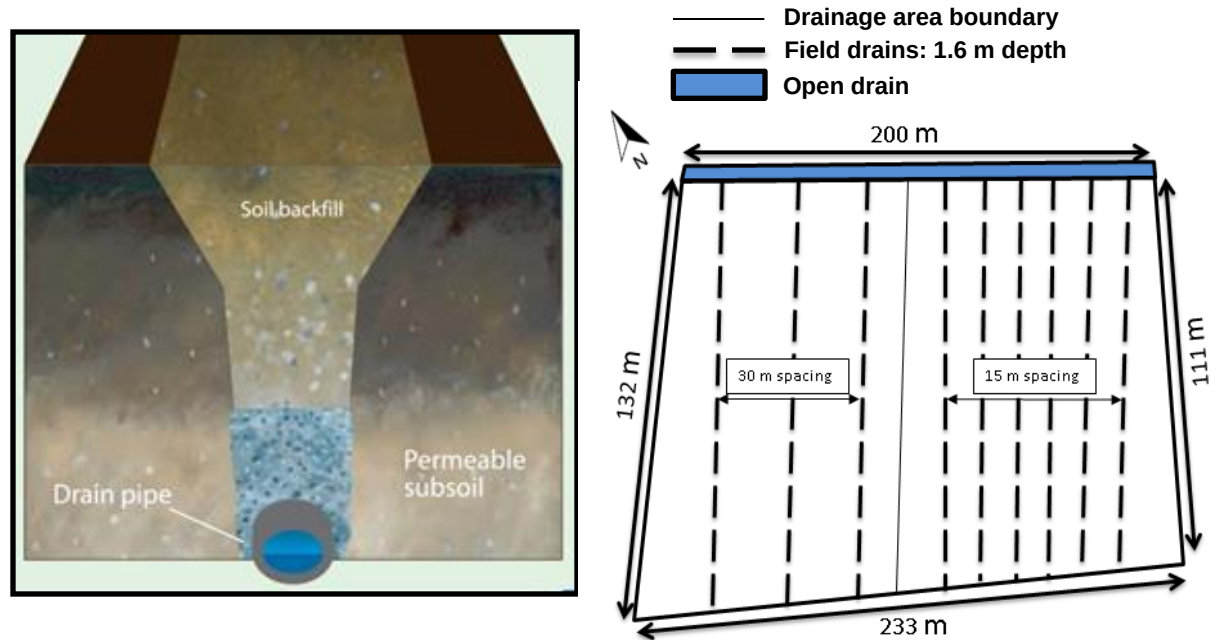


Rossmore: Groundwater drainage system

Soil Test pits

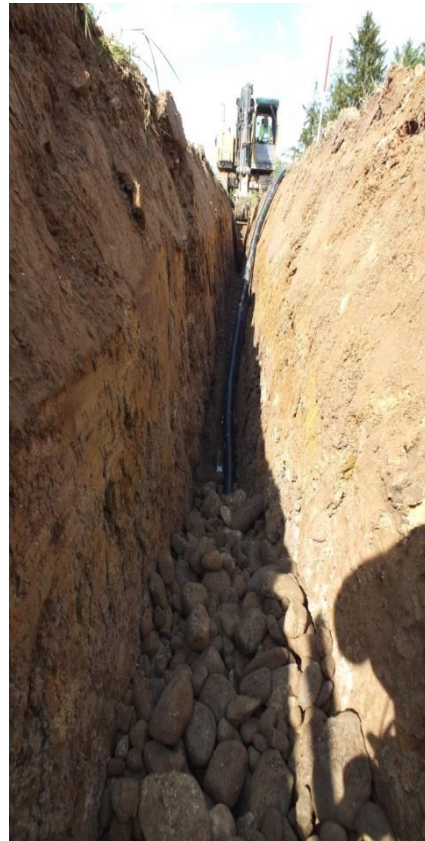


Drainage System and Layout



- Where a permeable layer will transmit water
- Where water can percolate to watertable
- Most effective way to discharge groundwater

Rossmore: Groundwater drainage work and costs



Costs

Total/ha

Drain installation @ €45/hr (55 hrs) €2,476

Drainage pipe @ €0.70/m (429 m) €300

Drainage stone @ €11.10/t (141 t) €1,562

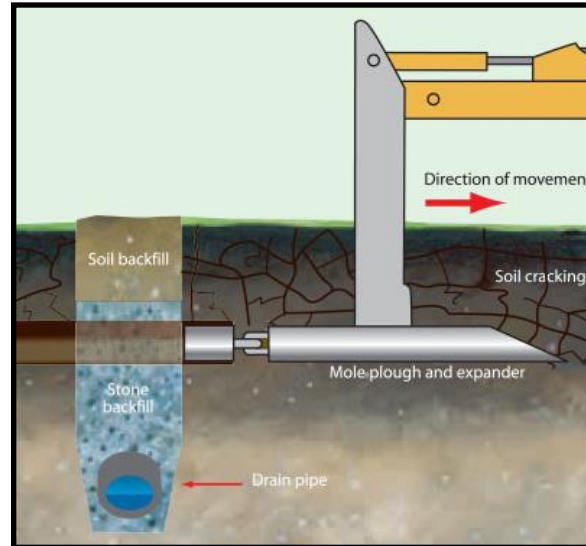
Drainage cost €4,338

Doonbeg: Shallow drainage system

Soil Test pits



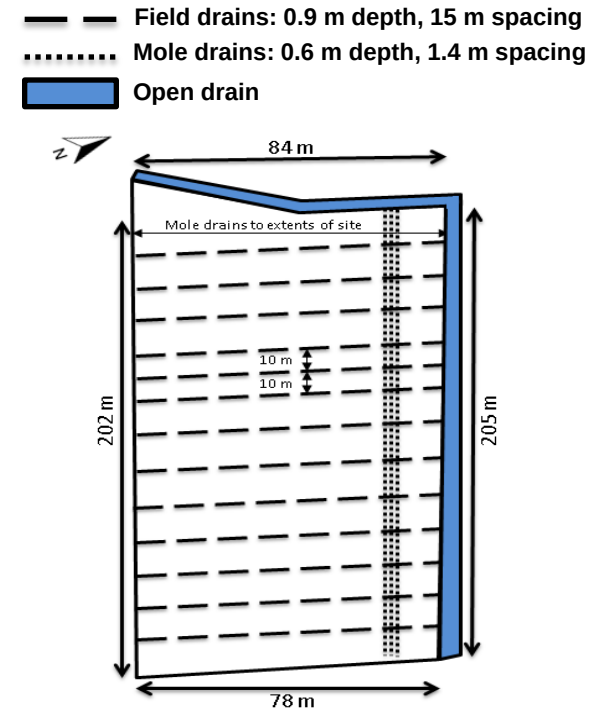
Drainage System and Layout



Aim to crack the soil

Dependent on:

- Soil clay content (>40%)
- Weather conditions
- Used in tandem with collector drains



Doonbeg: Shallow drainage work and costs



Costs

Total/ha

Drain installation @ €40/hr (66 hrs)	€2,639
Drainage pipe @ €0.80/m (688 m)	€550
Drainage stone @ €13.48/t (197 t)	€2,650
Mole installation	€100
<u>Drainage cost</u>	<u>€5,939</u>



Measurement of water balance (15 min. intervals)



NEWS

Three weather warnings issued by Met Éireann

Friday 11th September 2015

Unsettled weather into next week

Met Éireann issues Status O



MET ÉIREANN ISSUES WEATHER WARNINGS AS WEEKEND APPROACHES

Met Éireann has issued a number of weather warnings which suggest, *as predicted yesterday*, it's going to be a very wet start to the weekend.

There is a Status Orange rainfall warning in place for Clare, Connacht, Cork, Kerry, Limerick and Tipperary as heavy, thundery showers are expected in these areas today.

Heavy rain causes flooding across

There is an orange rainfall warning in Clare, Cork, Kerry, Limerick and Tipperary.

Sep 11th 2015, 10:42 PM 55,207 Views 60 Comments

Share 148

Updated 9.33pm

HEAVY RAIN THIS evening has caused flooding in a number of areas across the country.

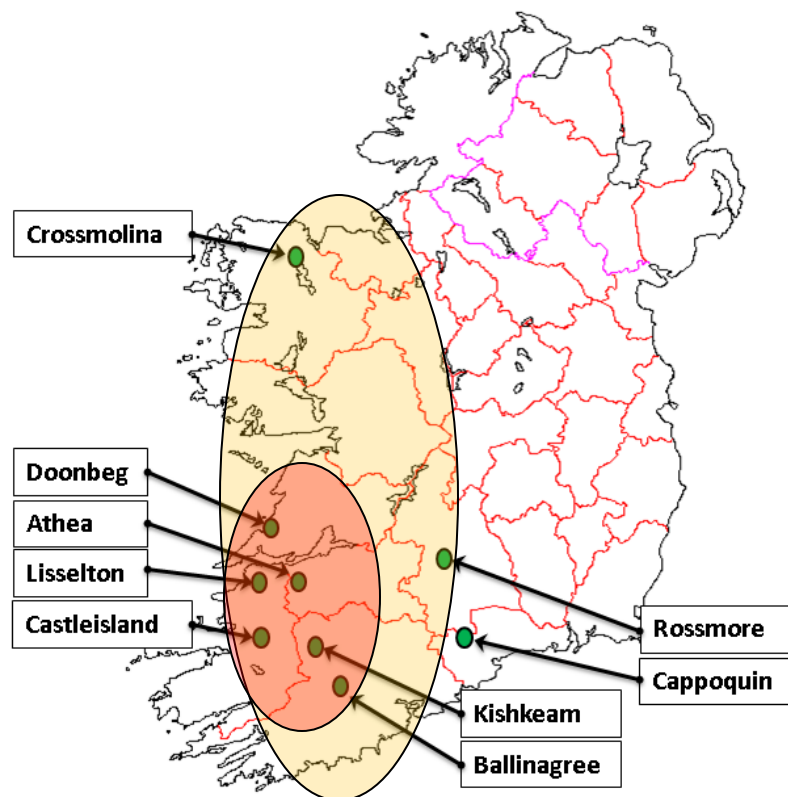
Just when we thought we might see some September sun, our hopes were quickly dashed by autumn's first weather warning.

There is currently an orange rainfall warning in effect in Clare, Cork, Kerry, Limerick and Tipperary.

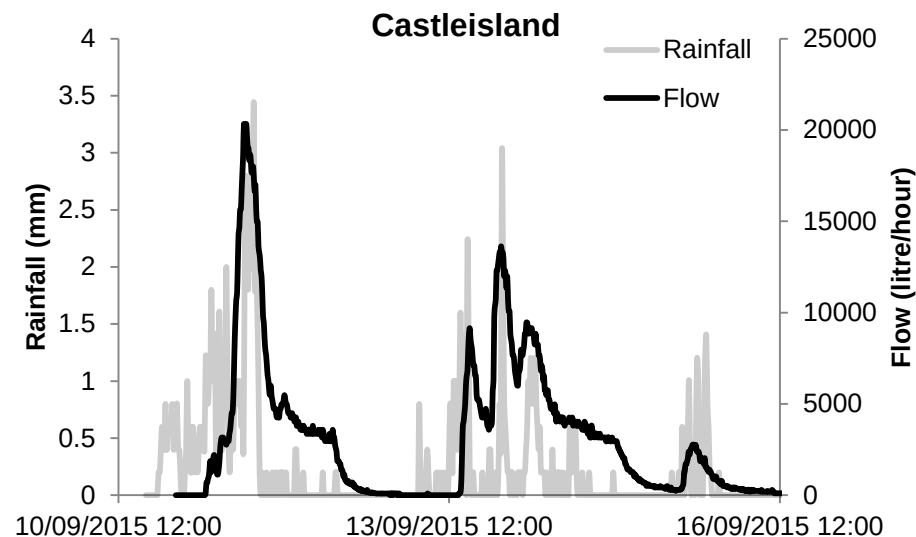
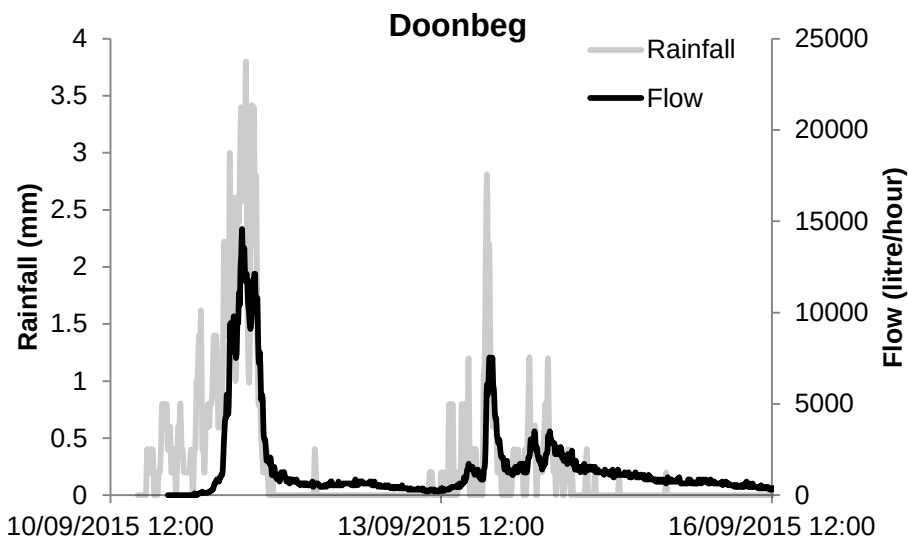


September 11th -15th 2015: Rainfall

Farm	Rainfall
Doonbeg	156.6 mm (6.2")
Ballinagree	147.4 mm (5.8")
Kishkeam	143.8 mm (5.7")
Lisselton	139.6 mm (5.5")
Castleisland	129.9 mm (5.1")
Athea	125.6 mm (4.9")
Crossmolina	64.4 mm (2.5")
Rossmore	45.6 mm (1.8")



September 11th -15th 2015: Flow Response



Area Drained	Total Volume Rainfall (L)	Total Volume drained (L)	Proportion drained (%)
1600 m ²	250,560	201,670	81%

Area Drained	Total Volume Rainfall (L)	Total Volume drained (L)	Proportion drained (%)
5750 m ²	746,925	417,410	56%



Thanks for your attention